REFERENCE PRICES AND RATES MANUAL

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INFORMAÇÃO PÚBLICA – PUBLIC INFORMATION

INTRODUCTION

This manual presents the calculation methodology of reference prices and rates published by B3.

1   REFERENCE PRICE OF ETFS

1.1   Fixed Income ETFs

For each Fixed Income ETF composed exclusively of Brazilian federal government bonds, the calculation will follow the following steps, Applied in sequence.

P1. If the ETF has a volume traded in the closing call greater than or equal the minimum of R$ 200.000,00, the reference price of the ETF will be the price negotiated in the closing call.

P2. If the volume of trades in the closing call is fewer than the minimum volume, the reference price will be calculated using the creation basket of the ETF, informed to B3 by the ETF's Sponsor in the morning of the calculation day t:

$$RP_t = \frac{\sum_{i=1}^{n}\left(UP\_FGB_{i,t} \times Qtd\_FGB_{i,t}\right)}{Qtd\_shares\_unit_t} \tag{1.1}$$

Being:

RP_t: Refence Price of the ETF;

n: Number of federal government bond in the creation basket;

$UP\_FGB_{i,t}$: UP of the federal government bond i. Calculated by B3 in the calculation day t, as specified in the technical note "federal government bond pricing methodology" available in the B3's website;

$Qtd\_FGB_{i,t}$: Quantity of the federal government bond i in the creation basket;

Qtd_shares_unit: Quantity of shares per creation unit of the ETF;

If in the calculation day t the B3 does not receives the creation basket and the quantity of shares per creation unit, the reference price will be calculated using the formula 1.1 with the last creation basket and unit received.

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2   EXCHANGE RATE OF REAIS TO UNITED STATES DOLLARS

2.1   Clean DI x US Dollar Spread

The clean DI x US dollar spread represents the spot exchange rate for immediate settlement in two days, relative to the calculation time of the adjustment price of the future dollar contract. The clean dollar spread rate for date t is obtained by collecting the dollar "casado" rate of the day $(casado\ colleceted_t)$ and the price of the first maturity of the dollar futures contract $(PA_{DOL\ F,t}^{V1})$. The dollar "casado" is the spread between the adjusted price of the first maturity and the spot exchange rate for spot settlement in two days.

More specifically,

$$clean\ DI\ x\ US\ dollar\ spread_t = \frac{PA_{DOL\ F,t}^{V1} - casado\ collected_t}{1.000}$$

Rounded to the fourth decimal place. On the last day of the month, both the "casado" rate and the clean dollar spread rate use the second expiration of the dollar futures contract as a reference.

The "casado" rate is obtained through informant collection. Section 4 presents the characteristics of the informant group. A filter is applied to the collected "casado" rates, discarding data outside the following range:

$$m(a) - dp(a) * N_{97,5\%} \leq c_i \leq m(a) + dp(a) * N_{97,5\%}$$

Where:

- a: contributor's sample

- $m(\cdot)$: arithmetic mean

- $dp(\cdot)$: standard deviation

- $N_{97,5\%}$: 97.5th percentile of the standard normal distribution (rounded to two decimal places), which is equivalent to $N_{97,5\%} = 1,96$.

The simple arithmetic mean of the rates within the range, rounded to the second decimal place, defines the "casado" rate for the day.

2.2 Two-days reference rate

The bid and ask exchange rates for the two-day reference rate is also collected with the "casado" rate. For each informant, the average rate between the bid and ask rates is calculated. From the sample, the two highest and two lowest rates are excluded, and with the remaining data, the simple arithmetic mean is calculated to obtain the two-day reference rate, rounded to the fourth decimal place.

2.3 One-day reference rate

From the two-day reference rate, the one-day reference rate is obtained by applying an interest adjustment using the following formula, rounded to the fourth decimal place:

$$One\ day\ reference\ rate_t = \frac{two\ day\ reference\ rate_t}{\left(\dfrac{(1 + CDI_t)^{1/252}}{1 + SOFR_t * \dfrac{dc}{360}}\right)}$$

Where:

- CDI_t: CDI (Interbank Deposit Certificate) on calculation date *t.*

- $SOFR_t$: Secured Overnight Financing Rate published by the Federal Reserve Bank of New York on date *t.* In case the rate is not available due to a holiday in New York, the last published SOFR rate will be used.

- dc: number of calendar days between calculation date *t* and the next business day.

2.4 Collection informants

Collection of the spot exchange rate for two-day settlement is conducted with a set of informant banks within the 30-minute period preceding the closing of the trading session for the future dollar contract. The set of informant banks consists of banks that act as clearing members of the "Câmara de Câmbio" and are among the top 20 clearing members with the highest accumulated financial volume in the four-month period. The determination period and validity period of the informant banks can be found at www.b3.com.br, Market data and Indices, Data Services, Market data, Queries, Derivatives Market, Indicators, Financial Indicators.

If there are less tha 12 informant and more than 7, the set of rate is considered valid if at least 8 rates are in the following range

$$m(a) - dp(a) * T_{97,5\%} \le c_i \le m(a) + dp(a) * T_{97,5\%}$$

Where:

- a: contributor's sample

- $m(\cdot)$: arithmetic mean

- $dp(\cdot)$: standard deviation

- $T_{97,5\%}$: 97.5th percentile of the t-student distribution with freedom degree equals the sample size minus 1.

If there are less than 8 informants, it will be used the "casado" of the previous day as follows.

$$casado\ computed_t = \frac{casado\ collected_{t-1}}{\left(\frac{(1 + CDI_t)^{1/252}}{1 + SOFR_t * \frac{dc}{360}}\right)}$$

$$two\ day\ referencial\ day_t = \frac{PA_{DOL\ F,t}^{V1} - casado\ computed_t}{1.000}$$

where dc is the number of days between date t and the business day before.

$[B]^3$

CHANGE LOG

Version	Item	Issue	Justification	Date
1	NA	NA	First version	08/07/2024